
Word square

P82111_en

A *word square of order k* is a matrix of $k \times k$ letters in form that in each row and in each column a word of the dictionary appears and that the same words are read horizontally and vertically. For instance, below some word squares of order three to eight are given:

```
  B I T      C A R D      H E A R T      G A R T E R      B R A V A D O      L A T E R A L S
  I C E      A R E A      E M B E R      A V E R S E      R E N A M E D      A X O N E M A L
  T E N      R E A R      A B U S E      R E C I T E      A N A L O G Y      T O E P L A T E
                D A R T      R E S I N      T R I B A L      V A L U E R S      E N P L A N E D
                    T R E N D      E S T A T E      A M O E B A S      R E L A N D E D
                        R E E L E D      D E G R A D E      A M A N D I N E
                                O D Y S S E Y      L A T E E N E R
                                    S L E D D E R S
```

Write a program that reads a dictionary and prints if various matrices of characters are or are not word squares.

Input

Input has two parts:

- The first part is a dictionary of n words. First, the value of n is given. Then, n words of the dictionary (all in uppercase letters) come in lexicographical order.
- The second part is various matrices of characters. Each matrix starts with an integer k that indicates the number of rows and columns and continues with k^2 characters (all uppercase letters) arranged in k rows and k columns. The value $k = 0$ indicates the end on the input.

Output

For each matrix of the input, print "YES" if forms a word square using some of the dictionary words and must print "NO" otherwise.

Observation

In private test data is used a dictionary derived from `/usr/share/dict/words` with four hundred thousand words and a thousand of matrices are tested.

Sample input

```
10
AREA BETTER BIT CARD DART HELLO ICE REAR TEN THE

3
BIT
ICE
TEN

4
CARD
AREA
REAR
DART

3
THE
HIS
ESA

3
THE
THE
THE

0
```

Sample output

```
YES
YES
NO
NO
```

Problem information

Author : Jordi Petit
Translator : Carlos Molina
Generation : 2023-07-14 18:21:20

© *Jutge.org*, 2006–2023.
<https://jutge.org>